

WHAT IS CLAIMED IS:

1 1. An apparatus for providing, to a digital system, data indicative of the
2 motion of an object, said apparatus comprising:

3 an elongated member translatable in an axial direction along a
4 longitudinal axis thereof and rotatable in a circumferential
5 direction about said longitudinal axis;

6 a swing arm having a distal section for attachment to the object and a
7 proximal section coupled to said elongated member such that
8 movement of the object results in corresponding movement of
9 said elongated member; and

10 an engagement surface for engaging an input device of the digital
11 system, said engagement surface being attached to said
12 elongated member such that movement of said elongated
13 member results in corresponding movement of said engagement
14 surface.

15 such that, when said engagement device is placed in contact with said
16 engagement surface, movement of said engagement surface is conveyed to the
17 digital system via said engagement device.

1 2. The apparatus of claim 1 wherein said elongated member comprises a
2 cylinder.

1 3. The apparatus of claim 2 wherein said cylinder has a circular cross
2 section.

1 4. The apparatus of claim 1 wherein said elongated member comprises a
2 prism.

1 5. The apparatus of claim 1 wherein said engagement surface is textured to
2 frictionally engage a tracking ball.

1 6. The apparatus of claim 1 wherein said engagement surface includes a
2 plurality of reflective regions for optically engaging an optical input device.

1 7. The apparatus of claim 1 wherein said engagement surface includes a
2 plurality of magnetic regions for magnetically engaging a magnetic input device.

1 8. The apparatus of claim 1 wherein said engagement surface comprises a
2 surface of said elongated member.

1 9. The apparatus of claim 1 further comprising an axial element coupled to
2 said proximal section of said swing arm, said axial element being attached to
3 said elongated member such that motion of said swing arm in a first direction
4 results in corresponding motion of said elongated member in said circumferential
5 direction.

1 10. The apparatus of claim 1 further comprising a pivoting element coupled to
2 said proximal section of said swing arm and pivotably coupled to said elongated
3 element such that motion of said swing arm in a second direction results in
4 corresponding motion of said elongated member in said axial direction.

1 11. The apparatus of claim 10 wherein said pivoting element comprises a
2 bracket having:

3 a first arm substantially parallel with said longitudinal axis and
4 attached to said elongated member such that axial translation of
5 said first arm results in axial translation of said elongated
6 member;

7 a second arm substantially parallel to said first arm, said second arm
8 being connected to said swing arm such that movement of said
9 swing arm in said second direction results in axial translation of
10 said second arm; and

11 a crosspiece connecting said first arm and said second arm such that
12 axial translation of said second arm results in axial translation of
13 said first arm.